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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/507,079

10/08/2004

Brian William Holmes

121058

2364

25944 7590 07/30/2010

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

NOTIFICATION DATE

DELIVERY MODE

07/30/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/507,079	<b>Applicant(s)</b> HOLMES, BRIAN WILLIAM	
	<b>Examiner</b> Audrey Y. Chang	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 32, 71, 74-90, 93-131 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32 is/are allowed.
- 6) ☒ Claim(s) 71, 74-90, 93-104 and 106-131 is/are rejected.
- 7) ☒ Claim(s) 105 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/15/10, 6/15/10</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's response filed on May 14, 2010 which has been entered into the file.
- ***The applicant is respectfully noted that the petition for requesting suspension of action on May 14, 2010 has been denied by the Office for lacking sufficient reasons.***
- The applicant has not filed any amendment to the claims.
- Claims 32, 71, 74-90 and 93-131 remain pending in this application.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 71, 74,75, 77 79-80, 82-86, 87-89, 93-95 and 98-103 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik (PN. 5,128,779) in view of the patents issued to Heckenamp et al (PN. 5,801,857), Yu et al (PN. 5,282,066), and Cueli et al (PN. 5,513,019).**

**Mallik** teaches an *authentication item*, serves as the *security device*, that is comprised of a *first and second holographic relief structures*, (23 and 103, Figure 11 or 121 and 127, Figure 12), that serve as the first and second *diffractive or holographic optically variable effect generating structures* wherein the first and second holographic relief structures are *superposed* to each other with the second holographic relief structure is viewable through the first holographic relief structure.

This reference has met all the limitations of the claims. Mallik teaches that the first and second holographic structures may include micro-relief structures of embossed holograms. It however does not

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teach explicitly that the second holographic structure is a volume hologram. But one skilled in the art must know that both embossed hologram and volume hologram are well-known types of hologram in the art that are commonly used in authentication art to provide security features. Such is explicitly taught by **Heckenkamp** et al that both embossed hologram and volume hologram are widely used as security features, (please see column 4, lines 23-36). It would then have been obvious to one skilled in the art to select one type than the other such as to replace embossed hologram by volume hologram for the purpose of design choice and for the purpose of providing better diffraction efficiency.

Mallik teaches explicitly that the authentication item via the discontinuous hologram is formed in a pattern to permit viewing the protected information through it and the viewing of an authenticating image or other light pattern reconstructed from the it in reflection can be viewed this means visually integrated image contributed by the protected information and the replay of the first holographic structure can be realized, (please see the abstract). Although this reference does not explicitly that "the replay characteristics of the structures to generate a visually integrated image whose optically variable generating effect appears to derive from *one optical effect generating structure*" (**with respect to amended claims 71 and 87**), namely the protected information is yield by the second holographic structure, Mallik does teach explicitly that the second holographic optically variable effect generating structure is viewable through the first holographic optically variable effect generating structure. The explicitly patterned or discontinuous layer of reflective material (25 or 123) make the incident light (107, Figure 11) to incident on the second structure (103) via the first structure (23). The diffracted lights (109) and (111) which represent the replayed images from the first structure and the second structure. Although this reference does not teaches *explicitly* if the image characteristics (i.e. the replayed diffracted lights are "a visually integrated image"), such modification would have been obvious to one skilled in the art to design the protected information being recorded in second holographic structure or to have the replayed images from the first and second structures to provide visually integrated viewing of the two holographic

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structures, for the benefit of providing a harmonious authentication measure or decorative appearance as desired. Noted the **same** incident light (107) is capable to replay **both** images from the first structure (23) and the second structure (103) at the **same time**. As shown in Figure 11, by moving viewing positions, the observer is capable of viewing the images replayed by diffracted light (109) and (111) in an "integrated" manner to provide "visually integrated image". Furthermore, Mallik teaches explicitly that the *precise angles* of the replay image lights (109 and 111) could be designed and adjusted by the optical geometry used in making the original masters of the first and second structures, (please see column 10, lines 25-30). Although Mallik teaches one design of viewing one reconstructed image from one of the holograms at a time, this actually means it is within general level of skill of a worker in the art to design reconstructed holographic images from the two holograms to be seen in integrated manner or independent manner. Furthermore, **Yu et al** in the same field of endeavor teaches multiple layer holograms with stacked hologram layers that each reconstructs a separate image and the separate images are superimposed and combined to provide a single visually integrated image that appears as single hologram diffracting from a single optical effect generating structure. It would therefore have been obvious to one skilled in the art to apply the teachings of Yu et al and Mallik to have the two reconstructed holographic images either *integrated* viewed or independently viewed to form an integrated image as appears from a single optical effect generating structure.

**Claims 71 and 87 have been amended to include the phrase** the first structure includes a reflective layer formed by high refractive index dielectric material. Mallik teaches that the first relief hologram includes a discontinuous reflective layer serves as partial reflective layer. However it does not teach that the partially reflective layer is formed by high refractive index dielectric material. **Cuelli** teaches a semi-transparent reflective layer for a hologram wherein the semi-transparent reflective layer may also be formed by using high refractive index dielectric layer, (please see column 4, lines 56-65). It would have been obvious to one skilled in the art to make the reflective layer a high refractive index

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dielectric material for the benefit of making the reflective layer a semi-transparent reflective layer to allow the second relief hologram be viewed without obstruction. The first relief hologram is regard having a grating structure.

The method form making the security device as recited in **claim 87** as rejected based on **Mallik** in view of **Yu et al**, **Heckenkamp et al** and **Cueli** as described for claim 71 above. **With regard to claim 88**, Mallik teaches that the first hologram relief pattern (23 or 121) can be formed by *embossing* into corresponding surface of an embossing layer, (please see column 11, lines 29-30).

**With regard to claim 74**, as shown in Figures 11-13, the first holographic structure is formed of a pure grating structure with the reflective layer conformed to the microstructure of the holographic structure and therefore in combine with it.

**With regard to claims 75 and 93**, these references teach that the optical variable structures are diffractive or holographic structures, which certainly includes the so-called zero-order diffractive device.

**With regard to claims 77 and 94-95**, Mallik teaches that the first and the second holograms are formed separately and attached to each other via an adhesive layer, (please see column 12, lines 17-20).

**With regard to claims 79-80, 83, 98, and 99**, Mallik teaches that the first and second relief holograms are supported by a carrier layer (31, Figure 3A) via a wax release layer (33, Figure 3A, please see column 5, lines 9-12). The authentication article having the first and second relief holograms can be attached to a substrate via an adhesive (27, Figure 3A).

**With regard claims 82 and 89**, Mallik teaches that the film for recording the relief hologram can be a plastic film, which is a polymer.

**With regard to claims 84 and 85**, this reference does not teach explicitly to include dye or pigment. However Mallik teaches that the authentication article further comprises printed photograph (15) or writing (13). This printed photograph or writing may include or be modified to include dye or pigment to make the printed information has color appearance. Heckenkamp et al in the same field of

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endeavor teaches that dye can be used in the printing process to provide color print in the holographic security device, (please see column 10, lines 13-20 and 29-32). Heckenkamp et al further teaches that luminescent dye can be used to add additional sensation to the color printing, (please see column 21, lines 1-3). It would then have been obvious to apply the teachings of Heckenkamp et al to modify the security device to include luminescent dye to add further color features into the device.

**With regard to claim 86**, Mallik teaches that multiple holograms can be formed in the authentication article. It would have been obvious to one skilled in the art to provide one or more relief holograms in between the first and second relief holograms for the benefit making desired designs for the security feature in the authentication article.

**With regard to claims 100-103**, Mallik teaches that the authentication article may be applied on documents such as credit card or stock certificated wherein the credit card and stock certificate is a form of banknote, (please see column 1, lines 21-30).

**3. Claims 76, 81, and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Mallik, Heckenkamp et al, Yu et al and Cueli as applied to claims 71 and 87 above, and further in view of the patent issued to Staub et al (PN. 5,886,798).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al, Yu et al and Cueli** as described for claims 71 and 87 above have met all the limitations of the claim.

**With regard to claims 76 and 90**, Mallik teaches that the relief hologram are formed by embossing or casting methods but it does not teach that the hologram may also be formed by e-beam lithograph. **Staub** et al in the same field of endeavor teaches that e-beam lithograph is a standard method for producing hologram, (please see column 8, lines 1-10). It would then have been obvious to one

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skilled in the art to apply the teachings of Staub et al to use e-beam lithography process as an alternative method for producing the holograms.

**With regard to claim 81**, Mallik teaches that the hologram may be formed in a plastic film but it does not teach that it may also be formed in a lacquer layer. Staub et al in the same field of endeavor teaches that the relief hologram may be formed in a lacquer layer, (5, please see Figure 1). It would then have been obvious to one skilled in the art to apply the teachings of Staub et al to make the relief hologram in a lacquer layer since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

**4. Claims 78 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Mallik, Heckenkamp et al, Yu et al and Cueli as applied to claims 71 and 87 above, and further in view of the patent issued to Ishibashi et al (PN. 6,861,388).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al, Yu et al and Cueli** as described for claims 71 and 87 above have met all the limitations of the claim.

Mallik teaches to use laminated adhesive to adhere the layers together, however it does not teach explicitly to make the adhesive include luminescent material. **Ishibashi et al** in the same field of endeavor teaches a security device wherein luminescent pigment may be added into the adhesive to enhance the counterfeit prevention effect, (please see column 7, lines 17-21). It would then have been obvious to one skilled in the art to apply the teachings of Ishibashi et al to add the luminescent material into the adhesive layer for the benefit of enhancing the counterfeit prevention effect.



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**5. Claim 96 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik, Heckenkamp et al, Yu et al and Cueli as applied to claim 87 above, and further in view of the patent issued to Kaule et al (PN. 6,294,241).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al, Yu et al and Cueli** as described for claim 87 above have met all the limitations of the claim.

Mallik teaches a laminated adhesive used to bond the first and second relief holograms, however it does not teach that the adhesive is UV curable. UV-curable adhesive is well-known in the art for adhering optical layers. **Kaule et al** in the same field of endeavor teaches that a UV-curable adhesion may be used to adhere the security document with hologram layer, (please see column 3, line 28-29, and column 4, lines 21-30). It would then have been obvious to one skilled in the art to use a UV-curable adhesive as the adhesive to bond the holograms for the benefit of making the bonding activated by using UV radiation.

**6. Claims 104, 106-107, 109, 111-120, 114-116, 117-120, 122-123, 126-131 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik (PN. 5,128,779) in view of the patents issued to Heckenkamp et al (PN. 5,801,857) and Yu et al (PN. 5,282,066).**

**Mallik** teaches an *authentication item*, serves as the *security device*, that is comprised of a *first and second holographic relief structures*, (23 and 103, Figure 11 or 121 and 127, Figure 12), that serve as the first and second *diffractive or holographic optically variable effect generating structures* wherein the first and second holographic relief structures are *superposed* to each other with the second holographic relief structure is viewable through the first holographic relief structure. Mallik teaches that the first holographic relief structure (23 or 121) further comprises a *discontinuous* layer of reflective aluminum metallic material, (25 or 123, column 4, lines 35-36). The discontinuous layer of reflective metal material

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registered with the surface relief structure of the first holographic optically variable effect generating structure.

This reference has met all the limitations of the claims with the exception that it does not teach explicitly to include dye or pigment between the holographic structures. However Mallik does teach that the authentication article further comprises printed photograph (15) or writing (13). This printed photograph or writing may include or be modified to include dye or pigment to make the printed information has color appearance. **Heckenkamp** et al in the same field of endeavor teaches that dye can be used in the printing process to provide color print in the holographic security device, (please see column 10, lines 13-20 and 29-32). Heckenkamp et al further teaches, that luminescent dye can be used to add additional sensation to the color printing, (please see column 21, lines 1-3). It would then have been obvious to apply the teachings of Heckenkamp et al to modify the security device to include luminescent dye to add further color features into the device. It is considered obvious matters of design choice to one skilled in the art to place the dye at desired positions for providing the desired color effect.

Mallik teaches explicitly that the authentication item via the discontinuous hologram is formed in a pattern to permit viewing the protected information through it and the viewing of an authenticating image or other light pattern reconstructed from the it in reflection can be viewed this means visually integrated image contributed by the protected information and the replay of the first holographic structure can be realized, (please see the abstract). Although this reference does not explicitly that *"the replay characteristics of the structures to generate a visually integrated image whose optically variable generating effect appears to derive from one optical effect generating structure"*, (**with respect to amended claims 104 and 117**), Mallik does teach explicitly that the second holographic optically variable effect generating structure is **viewable** through the first holographic optically variable effect generating structure. The explicitly patterned or discontinuous layer of reflective material (25 or 123) make the incident light (107, Figure 11) to incident on the second structure (103) via the first structure

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(23). The diffracted lights (109) and (111) which represent the replayed images from the first structure and the second structure. Although this reference does not teach *explicitly* if the image characteristics (i.e. the replayed diffracted lights are "a visually integrated image"), such modification would have been obvious to one skilled in the art to design the protected information being recorded in second holographic structure or to have the replayed images from the first and second structures to provide visually integrated viewing of the two holographic structures, for the benefit of providing a harmonious authentication measure or decorative appearance as desired. Noted the **same** incident light (107) is capable to replay **both** images from the first structure (23) and the second structure (103) at the **same time**. As shown in Figure 11, by moving viewing positions, the observer is capable of viewing the images replayed by diffracted light (109) and (111) in an "**integrated**" manner to provide "visually integrated image". Furthermore, Mallik teaches explicitly that the *precise angles* of the replay image lights (109 and 111) could be designed and adjusted by the optical geometry used in making the original masters of the first and second structures, (please see column 10, lines 25-30). Although Mallik teaches **one** design of viewing one reconstructed image from one of the holograms at a time, this actually means it is within general level of skill of a worker in the art to design reconstructed holographic images from the two holograms to be seen either in integrated manner or independent manner. Furthermore, **Yu et al** in the same field of endeavor teaches multiple layer holograms with stacked hologram layers that each reconstructs a separate image and the separate images are superimposed and combined to provide a single visually integrated image that appears as single hologram diffracting from a single optical effect generating structure. It would therefore have been obvious to one skilled in the art to apply the teachings of Yu et al and Mallik to have the two reconstructed holographic images either *integrated* viewed or independently viewed to form an integrated image as appears from a single optical effect generating structure.

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The method form making the security device as recited in **claim 117** as rejected based on Mallik in view of Heckenkamp et al as described for claim 71 above. **With regard to claim 118**, Mallik teaches that the first hologram relief pattern (23 or 121) can be formed by *embossing* into corresponding surface of an embossing layer, (please see column 11, lines 29-30).

**With regard to claims 106**, Mallik teaches that second relief hologram pattern further comprises an opaque, reflective layer (105 or 129, column 10, line 4-6 and column 11, lines 52-54).

**With regard to claims 107 and 120**, Mallik teaches that the first hologram relief pattern (23 or 121) can be formed by *embossing* or casting methods and the second hologram relief pattern (103 or 127) can be formed by casting, (please see column 11, lines 43-53). Embossing method is different from casting method.

**With regard to claims 109, and 122-123**, Mallik teaches that the first and the second holograms are formed separately and attached to each other via an adhesive layer, (please see column 12, lines 17-20).

**With regard to claims 111-112, 115, 126, and 127**, Mallik teaches that the first and second relief holograms are supported by a carrier layer (31, Figure 3A) via a wax release layer (33, Figure 3A, please see column 5, lines 9-12). The authentication article having the first and second relief holograms can be attached to a substrate via an adhesive (27, Figure 3A).

**With regard claims 114, and 119**, Mallik teaches that the film for recording the relief hologram can be a plastic film, which is a polymer.

**With regard to claim 116**, Mallik teaches that multiple holograms can be formed in the authentication article. It would have been obvious to one skilled in the art to provide one or more relief holograms in between the first and second relief holograms for the benefit making desired designs for the security feature in the authentication article.

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**With regard to claims 128-131**, Mallik teaches that the authentication article may be applied on documents such as credit card or stock certificate wherein the credit card and stock certificate is a form of banknote, (please see column 1, lines 21-30).

**7. Claims 108, 113, and 121 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Mallik, Heckenkamp et al and Yu et al as applied to claims 104 and 117 above, and further in view of the patent issued to Staub et al (PN. 5,886,798).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al and Yu et al** as described for claims 104 and 117 above have met all the limitations of the claim.

**With regard to claims 108 and 121**, Mallik teaches that the relief hologram are formed by embossing or casting methods but it does not teach that the hologram may also be formed by e-beam lithograph. **Staub et al** in the same field of endeavor teaches that e-beam lithograph is a standard method for producing hologram, (please see column 8, lines 1-10). It would then have been obvious to one skilled in the art to apply the teachings of Staub et al to use e-beam lithography process as an alternative method for producing the holograms.

**With regard to claim 113**, Mallik teaches that the hologram may be formed in a plastic film but it does not teach that it may also be formed in a lacquer layer. Staub et al in the same field of endeavor teaches that the relief hologram may be formed in a lacquer layer, (5, please see Figure 1). It would then have been obvious to one skilled in the art to apply the teachings of Staub et al to make the relief hologram in a lacquer layer since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

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**8. Claims 110 and 125 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Mallik, Heckenkamp et al and Yu et al as applied to claims 104 and 117 above, and further in view of the patent issued to Ishibashi et al (PN. 6,861,388).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al** and **Yu et al** as described for claims 104 and 117 above have met all the limitations of the claim.

Mallik teaches to used laminated adhesive to adhere the layers together, however it does not teach explicitly to make the adhesive include luminescent material. Ishibashi et al in the same field of endeavor teaches a security device wherein luminescent pigment may be added into the adhesive to enhance the counterfeit prevent effect, (please see column 7, lines 17-21). It would then have been obvious to one skilled in the art to apply the teachings of Ishibashi et al to add the luminescent material into the adhesive layer for the benefit of enhancing the counterfeit prevention effect.

**9. Claim 124 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Mallik, Heckenkamp et al and Yu et al as applied to claim 117 above, and further in view of the patent issued to Kaule et al (PN. 6,294,241).**

The *authentication article* including a first and second relief holograms taught by **Mallik** in combination with the teachings of **Heckenkamp et al** and **Yu et al** as described for claim 117 above have met all the limitations of the claim.

Mallik teaches a laminated adhesive used to bond the first and second relief holograms, however it does not teach that the adhesive is UV curable. UV-curable adhesive is well-known in the art for adhering optical layers. **Kaule et al** in the same field of endeavor teaches that a UV-curable adhesion may be used to adhere the security document with hologram layer, (please see column 3, line 28-29, and column 4, lines 21-30). It would then have been obvious to one skilled in the art to use a UV-curable

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adhesive as the adhesive to bond the holograms for the benefit of making the bonding activated by using UV radiation.

***Allowable Subject Matter***

10. Claim 32 is allowed.

11. Claim 105 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: of the prior art references considered none disclosed a security device having first and second superposed diffractive or holographic optically variable effect generating structures where the structures are first and second zero-order diffractive device with the first zero-order diffractive device generates an image in first color at a first orientation and in a second color at a second orientation and the second zero-order diffractive device generates an image in the second color in the first orientation and the first color in the second orientation, as set forth in the claim.

***Response to Arguments***

13. Applicant's arguments filed on May 14, 2010 have been fully considered but they are not persuasive.

14. The applicant is respectfully noted that the petition for requesting suspension of action on May 14, 2010 has been denied by the Office.

15. In response to applicant's arguments which state that office action has numerous inconsistencies the examiner respectfully apologizes yet respectfully disagrees, since the office action does explicitly state what features have been met by the cited references and what features have not. The languages as applicant mentioned, (remark pages 1-2), clearly states that the cited reference teaches all the limitations

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except the one that have been identified and fully addressed. There are no inconsistencies since one would be able to clearly understand how the cited references have met the limitations of the claims.

16. In response to applicant's arguments which state that it would not have been obvious to combine different types of holograms the examiner respectfully disagrees. One skilled in the art must understand the properties of different types of holograms, namely thin hologram (such as embossed hologram) or volume hologram and how to make each of them. One skilled in the art must also know that volume hologram does have a better diffraction efficiency. It is within general level of skill in the art to utilize different type of holograms according to its properties to best suit for the particular application requirement. If one skilled in the art knows to combine multiple holograms as explicitly taught by cited Mallik reference and if one skilled in the art knows different types of holograms can be formed, (for instance standard interference method, casting, molding or embossing, as taught by Mallik) this means different types of hologram can be combined as desired to achieve the best viewing condition. It is therefore within general level skill in the art and obvious to one skilled in the art to combine different types of holograms for the benefit to achieve the desired operation quality. In particular, knowing the volume hologram has the best diffraction efficiency, one skilled in the art would be motivated to modify the hologram to include volume type hologram.

17. In response to applicant's arguments which state that different types of hologram would respond to incident light differently and surface relief hologram will reflect light over large wavelength range while Bragg hologram will reflect light in narrow wavelength range, (please see remark page 3), the examiner respectfully disagrees since these statements are totally wrong. The factor that determining how the hologram respond to the incident light as for which wavelength range the hologram is capable of diffracting is NOT depend on the type of the hologram, but on the actual periodicity of the fringes. Both relief type hologram and volume type hologram can diffract light of the same wavelength range. This statement is wrong the arguments therefore are wrong also.



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18. In response to applicant's arguments concerning the factual basis for the cited references in generating visually integrated image, the examiner wishes to point out to applicant that firstly each hologram **can only be** reconstructed by using the light having the character used to record it, ( for instance wavelength and angular direction), to make the hologram be viewed one at the time or multiple at time, can easily be achieved by making the holograms to have same or different reconstruction angular direction. Yu teaches such *explicitly* so that the reconstructed images are *superimposed*, (please see the Abstract). This means the reconstructed images are viewed together to form "integrated image". The features concerning the "integrated image" therefore are met by the combination of Mallik and Yu references.

19. In response to applicant's arguments concerning the importance of the reflective layer of cited Mallik reference being "opaque" is not persuasive since criticality of having this reflective layer is to "reflect" incident light not to be opacity. Applicant being one skilled in the art must understand that the high refractive index layer can also provide this reflection of light to produce the hologram in first layer while allowing feature underneath being viewed. Furthermore, it is known in the art that both metallic layer and high refractive index layer can be used as reflective layer. The high refractive index layer can reflect light at certain wavelength and at this wavelength the layer serves as "opaque" mask to the light the same way as the metal layer.

20. In response to applicant's arguments concerning claims 104 and 107, recites "the first optically variable effect generating structure includes a discontinuous metallic layer, registered with the surface relief microstructure of the first optically variable effect generating structure." Claim 117 recites "providing the surface relief microstructures of the first optically variable effect generating structure with a discontinuous effective metal layer registered with the surface relief microstructure of the first optically variable effect generating structure.", the examiner respectfully disagrees with applicant's statement "The applied references fail to disclose these features for the reasons set forth in the February 26, 2009

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Amendment and the September 9, 2009 amendment. In the outstanding Office Action and the previous Office Action. The applicant is respectfully noted that the response filed on February 26, 2009 does NOT contain any arguments to claims 104 and 107 since these claims have NOT yet been submitted. As far as the features concerning the “registration”, Figure 11 of Mallik EXPLICIT shows that the discontinuous metal layer registers with the surface relief microstructure (23) of the first optically variable effect generating structure. The applicant is respectfully reminded to carefully study the cited references. Figure 11 of Mallik reference teach the features in question EXPLICITLY clear. Furthermore, applicant's interpretation of “in registration” is not in the claims and it is NOT supported by the specification. They therefore cannot be relied upon to overcome the rejection.

21. The position concerning placing dye or printed information is considered to be obvious matters of design choice to one skilled in the art for the benefit of add more decorative feature to the article.

### ***Conclusion***

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***Audrey Y. Chang, Ph.D.***  
***/Audrey Y. Chang/***  
***Primary Examiner, Art Unit 2872***